

TRANSFER OF *QUADRASIA* FROM THE
PLANAXIDAE TO THE BUCCINIDAE
(MOLLUSCA: GASTROPODA: PROSOBRANCHIA)

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Abstract.—*Quadrasia hidalgoi* Crosse, previously assigned to the Planaxidae, is herein transferred to the genus *Clea* H. and A. Adams, family Buccinidae, on the basis of anatomical characters. The animal has a long muscular inhalant siphon, closed pallial gonoducts, a pleurembolic proboscis, and a rachiglossate radula.

The poorly known genus *Quadrasia* Crosse, 1886, has been cited by Crosse (1886), Cossmann (1906:197), Thiele (1929:204), and Wenz (1940:722) as the only freshwater representative of the family Planaxidae Gray, 1850. Very few references to this monotypic genus occur in the literature, and despite a thorough search of major museum collections throughout the world only three specimens were found, one of which was the holotype. A single, alcohol-preserved specimen, from which soft parts were extracted, was studied. Anatomical examination showed that *Quadrasia hidalgoi* Crosse, 1886, is not a planaxid as originally suggested, but should be allocated to the genus *Clea* H. and A. Adams of the family Buccinidae. A redescription of this genus and species follows with a discussion of the evidence placing them in the Buccinidae.

Genus *Clea* H. and A. Adams, 1855

Clea H. and A. Adams, 1855:119. Type species: *Clea nigricans* A. Adams, 1855, by monotypy and original designation; 1858:623; Thiele, 1931:316-317.

Quadrasia Crosse, 1886:159-161. Type species: *Quadrasia hidalgoi* Crosse, 1886, by monotypy; Cossmann, 1906:197; Thiele, 1929:204; Wenz, 1940:722, fig. 2090.

Diagnosis.—Shell solid, ovate, moderately elongate with 5-6 convex, inflated, transversely striated whorls of overall smooth aspect. Protoconch large, smooth, usually missing. Aperture large, about one-half the shell length, fusiform. Outer lip smooth, convex. Columella concave, abruptly truncate with basal fold. Anterior canal short. Shell cream-colored but with horny, dark brown periostracum. Operculum corneous, ovate, with subterminal nucleus. Radula rachiglossate, buccinid.

Remarks.—This little-known taxon has been found in the Philippines, Borneo, and in parts of Indonesia. It is noteworthy in being a freshwater representative of the largely marine Buccinidae.

Clea hidalgoi (Crosse),
new combination
Figs. 1, 2

Quadrasia hidalgoi Crosse, 1886:161-163, pl. 8, fig. 7; (Holotype: MNHNP).—Cossmann, 1906:197.—Thiele, 1929:204.—Wenz, 1940:722, fig. 2090.

Description.—Shell moderate in size (holotype 13.4 mm in length), solid, moderately elongate with overall smooth aspect, comprising about 6 inflated whorls. Shell sculptured with minute axial riblets and spiral threads producing wrinkled look under

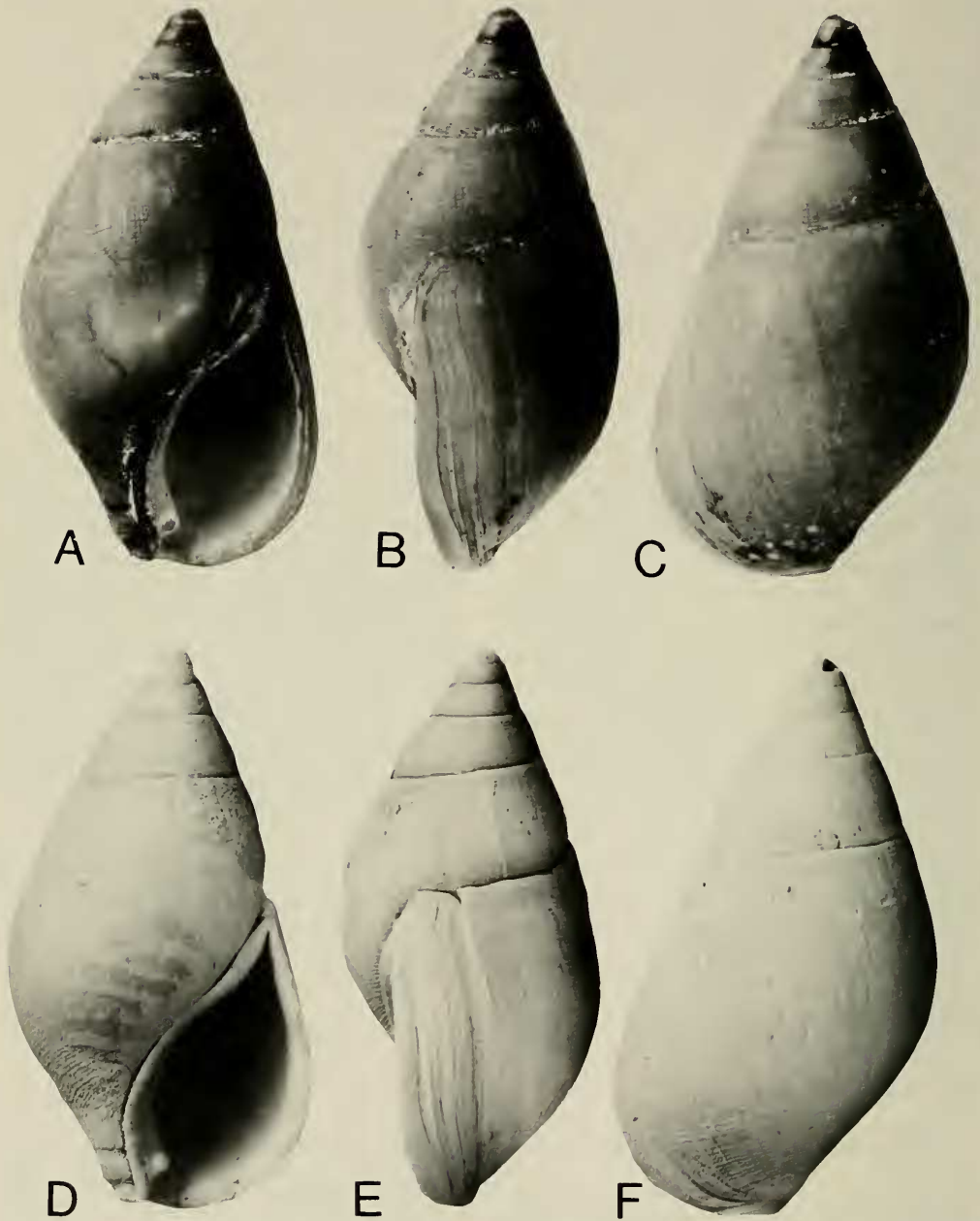


Fig. 1. A-F. Apertural, side, and dorsal views of holotype of *Quadrasia hidalgoi* Crosse, 1886 (MNHNP, no number, 13.5 mm length). Bottom row shows holotype whitened with ammonium oxide to enhance sculptural details.

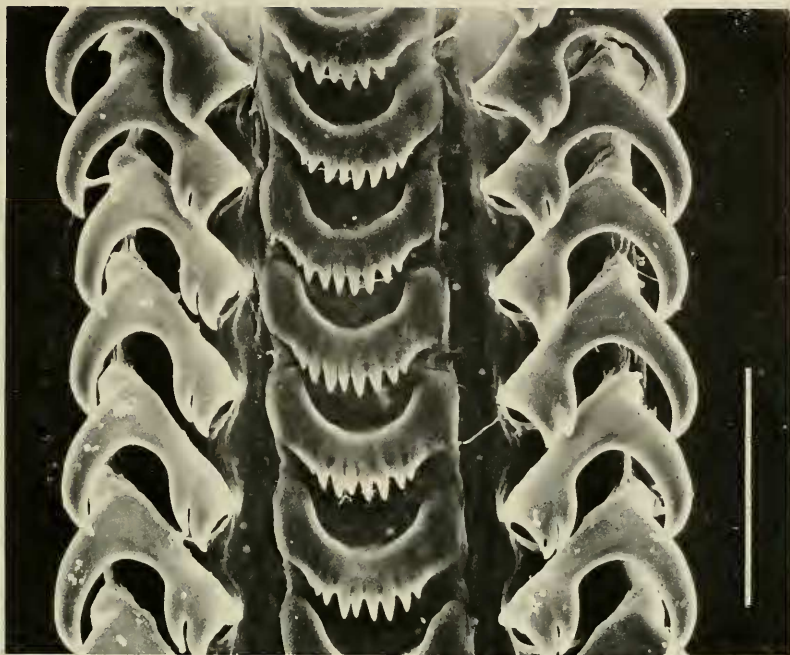


Fig. 2. Radula of *Clea hidalgoi* from Palawan, Philippines (bar = 110 μ m).

magnification. Protoconch large, 1.5 whorls, smooth. Large body whorl with elongate, fusiform aperture spanning about one-half of shell length. Anal canal elongate. Anterior siphonal canal short, but well-developed. Outer lip smooth, slightly sinuous. Columella concave with prominent basal tooth and slight columellar callus. Suture moderately impressed, slightly overhung by each consecutive whorl. Shell flesh-colored, early whorls dark purple-brown. Periostracum well-developed, wrinkled, light brown, giving shell overall tan color. Operculum corneous, elongate-ovate, paucispiral with subterminal nucleus. Radula (Fig. 2) rachiglossate, long and narrow. Rachidian tooth strongly arched with cutting edge of 7-8 tiny, sharp denticles and expanded lateral extensions. Lateral teeth large, angular in outline, and tricuspid with 2 sharp, curved inner basal cusps and large sickle-shaped distal cusp. On basal radular membrane, laterals slightly separated from rachidian

teeth. Animal with long muscular inhalant siphon, closed pallial gonoducts, and pleurombolic proboscis.

Remarks.—*Quadrasia hidalgoi* was described from freshwater streams on the island of Balabac, Philippine Islands. The original description (Crosse 1886:160) stated that according to the observations of Quadras, it lives on sandy bottoms in quiet streams.

Both the shell and radula of *Quadrasia* are similar to those of some buccinids which have been described from freshwater habitats in this region. Among these freshwater buccinid genera the genus *Clea* H. and A. Adams best matches the description of *Quadrasia*. Crosse (1886:161-162) referred *Quadrasia hidalgoi* to the Planaxidae, but this allocation was based on shell characters only. He pointed out that other marine prosobranch families also had freshwater representatives, specifically referring to *Canidia* H. Adams, 1862 (not Thompson,

1857), which is a synonym of *Anentome* Cossmann, 1901, a ribbed, buccinid genus closely related to *Clea*. Crosse (1886) was apparently unaware of the description of *Clea* by H. and A. Adams in 1855. Had he been familiar with the type species of this genus, *Clea nigricans*, he would have noted the close resemblance of it to *Quadrasia hidalgoi*. Thiele (1931:317) considered *Canidia* to be a subgenus of *Clea*. H. and A. Adams subsequently (1858:623) referred *Clea* to the subfamily Melanopsidae (superfamily Cerithiacea).

The radula of *Quadrasia* is very similar to that of *Clea nigricans* as depicted by Thiele (1931:317) and also to *Macron* (Thiele 1931:316). The tricuspid lateral teeth of *Quadrasia* clearly distinguish it from the similar radulae of nassariids, which have bicuspid laterals (Cernohorsky 1984:12–13).

As may be seen in the above discussion, *Quadrasia hidalgoi* was previously allocated to the Planaxidae and Melanopsidae, both in the superfamily Cerithiacea. Examination of the anatomy of *Quadrasia* revealed a long, tubular inhalant siphon, closed pallial gonoducts, a pleurembolic proboscis, and a rachiglossate radula. These anatomical and radular features exclude *Quadrasia* from the Cerithiacea and point to the Buccinidae as the proper taxonomic assignment. Within this family, the genus *Clea* appears best to fit the shell and radular characters seen in *Quadrasia*, which is here considered to be conspecific with *Clea*. *Quadrasia hidalgoi* is herein transferred from the Planaxidae and assigned to the genus *Clea* in the family Buccinidae.

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